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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,615	09/22/2003	Theodore W. Houston	TI 35657	1175
23494	7590	11/01/2006	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			OWENS, DOUGLAS W	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	
			2811	

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/667,615	Applicant(s) HOUSTON, THEODORE W.	
	Examiner Douglas W. Owens	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9-17,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17,19 and 20 is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-12 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 1, 5 – 7 and 10 – 17 is withdrawn in view of the newly discovered reference(s) to Mouli. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim requires that the ratio of width of the body region to the gate length is 1:1, which is understood to mean that the width is the same as the gate length. However, the independent claim also requires that the width of the body region be greater than the gate length, so it cannot be equal, which claim 15 requires.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3 – 7, 9 – 12 and 14 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2005/0128787 to Mouli.

Regarding claim 1, Mouli teaches a memory device (Fig. 3), comprising:

- a body region (217) insulated from a substrate;
- an insulating layer (225) on a surface of the body region; and
- a gate structure (220) on the insulating layer and conformally surrounding a portion of the body region, wherein a width of the body region is sufficient to provide a not fully depleted region (paragraph [0038]).

Mouli further teaches that the width of the body region has a thickness in the range of 300 to 1000 Angstroms (paragraph [0053]). Mouli is silent with respect to the gate length. Accordingly, Mouli does not teach a width of the body region being greater than a length of the gate. However, a gate length of less than 1000 Angstroms or 100 nanometers would meet this limitation. Gate lengths of less than 100 nanometers are common to the art. Additionally, the gate length is a known result effective variable that is subject to optimization. It would have been obvious to one of ordinary skill in the art to find the optimal length of the gate through routine experimentation (*In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)). A gate length of less than 100 nanometers would have resulted in body with that that is greater than the gate length.

Regarding claims 3, 4, 14 and 16, the ratio of the body region width to the gate length would have been the direct result of the channel length. As discussed above, it would have been obvious to one of ordinary skill in the art to arrive at the optimal channel length.

Regarding claim 5, Mouli teaches a memory device, wherein the body region is insulated from the substrate by an oxide layer (213).

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Regarding claim 6 Mouli teaches a memory device, wherein the body region is insulated from the substrate by a buried layer of a SOI substrate (Paragraph [0051]).

Regarding claims 7 and 9, Mouli teaches a method of manufacturing a memory device (Fig. 3), comprising:

- forming a body region (217) insulated from a substrate;
- depositing an insulating layer (225) on a surface of the body region; and
- forming a gate structure (220) on the insulating layer and conformally surrounding a portion of the body region, wherein a width of the body region is sufficient to provide a not fully depleted region (paragraph [0038]).

Mouli further teaches that the width of the body region has a thickness in the range of 300 to 1000 Angstroms (paragraph [0053]). Mouli is silent with respect to the gate length. Accordingly, Mouli does not teach a width of the body region being greater than a length of the gate. However, a gate length of less than 1000 Angstroms or 100 nanometers would meet this limitation. Gate lengths of less than 100 nanometers are common to the art. Additionally, the gate length is a known result effective variable that is subject to optimization. It would have been obvious to one of ordinary skill in the art to find the optimal length of the gate through routine experimentation (*In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)). A gate length of less than 100 nanometers would have resulted in body with that that is greater than the gate length.

Regarding claim 10, Mouli teaches a method, wherein the body region is formed from a silicon layer of an SOI substrate (Paragraph [0051]).

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Regarding claims 11 and 12, Mouli teaches a method, wherein forming the body region includes forming sidewall mask by depositing a patterning a resist over the silicon layer and performing an anisotropic etch to remove portions of the silicon layer not protect by said mask (paragraph [0053]). The spacer defined lithography disclosed in paragraph [0053] would have included each of the claimed steps.

Regarding claim 15, Mouli teaches a method, wherein the gate structure is a FinFet.

Allowable Subject Matter

6. Claim 13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. Claims 17, 19 and 20 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard T. Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Douglas W. Owens". The signature is fluid and cursive, with the first name "Douglas" being the most prominent part.

Douglas W Owens
Primary Examiner
Art Unit 2811

DWO
October 27, 2006